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File: USPT

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TITLE: Solid phase extraction of phenethyl alcohol

BSPR:

The production of aroma compounds represents an important tool in the production of natural flavors for food and beverage industries. E. Albertazzi, et al., Biotech. Lett. 16, 491-6 (1994). One of the most commonly used aroma compounds is phenethyl alcohol. Phenethyl alcohol (e.g., phenethanol, 2-phenylethanol, or benzeneethanol) is naturally present in many essential oils, and has a rose-like/honey floral odor. Phenethyl alcohol is chemically synthesized or extracted in commercial applications as a flavoring or fragrance for consumer goods, such as perfumes and food.

ity or alkalinity. In t at which the solu- 7) is not always the

importance in a large ; such as water puri- s for leather, in pres- electroplating baths, ous other instances.

ingicide formulations ophthalmimide.

mark for cyclobarbital

a standardized mix- 1,2,3,3,5-hexamethyl-

with musk-like odor 5°C and becomes liq- conventional solvents

or a pharmaceutical

r a pharmaceutical

conditions in which liquid, or gas(vapor). ily on the concentra- solids are the most ids occupy the inter- normally crystalline, es are without struc-

listinct, and mechan- ispersion or solution. quid, or gaseous (va- on the major compo- r external phase and ispersed or internal not be uniformly dis- . See colloid chemis-

illard Gibbs (q.v.) in il system $F = n - r - 2$ rmdynamic equilib- actants. The number red in a given hetero- ed by analysis or ob- iph by proper choice .ses (r), and the inde- mperature and pres-

rule apply to all mul- solvent blends, glass,

nine.

-methyl-1,5-cyclohex- CH_2) $_2$ CH:CH. A

is (a) *d*- and (b) *l*-op-

ble in water; soluble °C); b.p. 66-68°C (16 (b) Sp. gr. 0.8324 m); refractive index

Derivation: (a) Found in ginger oil; Ceylon and Sey- chelles cinnamon oil. (b) Found in eucalyptus oil. Hazard: Moderately toxic by ingestion and skin ab- sorption, strong irritant. Uses: Flavoring; perfumery.

beta-**phellandrene** (4-isopropyl-1-methylene-2-cyclohex- ene) $\text{CH}_2\text{CCH}:\text{CHCH}[\text{CH}(\text{CH}_3)_2]\text{CH}_2\text{CH}_2$. A mo-

nocyclic terpene occurring as (a) *d*- and (b) *l*-optical isomers.

Properties: (a) Mobile oil with pleasant odor and a burning taste. Sp. gr. 0.8520 (20°C); b.p. 171-172°C (760 mm); refractive index 1.4788. (b) Mobile oil; sp. gr. 0.8497 (15°C); b.p. 178-179°C; flash point 120°F (T.C.C.). Toxicity unknown; refractive index 1.4800. Both are insoluble in water and alcohol; soluble in ether.

Derivation: (a) lemon oil. (b) Japanese peppermint oil.

Hazard: Flammable, moderate fire risk.

"**Phemerol**."³³⁰ Trademark for benzethonium chloride (q.v.).

phenacaine hydrochloride

$\text{C}_7\text{H}_9\text{OC}_6\text{H}_4\text{NCH}(\text{CH}_3)\text{NC}_6\text{H}_4\text{OC}_2\text{H}_5 \cdot \text{HCl} \cdot \text{H}_2\text{O}$.

N,N'-Bis(para-ethoxyphenyl) acetamide hydro- chloride.

Properties: Small, white crystals; odorless; faintly bitter taste. Incompatible with alkalis. M.p. 190°C. Soluble in alcohol, boiling water and chloroform; less so in cold water, insoluble in ether.

Grades: N.F.; technical.

Use: Medicine

phenacemide (phenylacetylurea)

$\text{C}_8\text{H}_9\text{CH}_2\text{CONHCONH}_2$.

Properties: White to creamy white, odorless, tasteless crystalline solid; m.p. 212-216°C; slightly soluble in alcohol, benzene, chloroform and ether; very slightly soluble in water.

Use: Medicine.

phenacetin. U.S.P. name for acetophenetidin (q.v.).

phenacyl chloride. See chloroacetophenone.

phenacyl fluoride. See fluoroacetophenone.

"**Phenamine**."³⁰⁷ Trademark for a series of direct dye- stuffs, used for the dyeing of cotton and paper.

phenanthraquinone. See phenanthrenequinone.

phenanthrene $\text{C}_{14}\text{H}_{10}$. A tricyclic hydrocarbon.

Properties: Colorless, shining crystals. Soluble in al-cohol, ether, benzene, carbon disulfide and acetic acid; insoluble in water. Sp. gr. 1.063; m.p. 100.35°C, b.p. 340°C. Combustible.

Derivation: Fractional distillation of high-boiling coal-tar oils, with subsequent recrystallization from alcohol.

Hazard: Photosensitizes skin, and may be a carcino- gen.

Uses: Dyestuffs; explosives; synthesis of drugs; biochemical research; phenanthrenequinone.

phenanthrene acetamide. $\text{C}_{16}\text{H}_{13}\text{NO}$. A carcinogen.

phenanthrenequinone. (Erroneously: phenanthraqui- none) $\text{C}_{14}\text{H}_8\text{O}_2$.

Properties: Yellow-orange, needle-like crystals. Solu- ble in sulfuric acid, benzene; glacial acetic acid and hot alcohol; slightly soluble in ether; insoluble in

water. Sp. gr. 1.4045; m.p. 206-207°C; b.p. sublimes above 360°C.

Derivation: By oxidation of a boiling solution of phen- anthrene in glacial acetic acid with chromic acid, solution in sodium disulfite, precipitation by means of hydrochloric acid and recrystallization.

Uses: Organic synthesis; dyes.

1,10-phenanthroline (4,5-phenanthroline; ortho-phenan- throline) $\text{C}_{12}\text{H}_8\text{N}_2 \cdot \text{H}_2\text{O}$. A heterotricyclic com- pound.

Properties: White crystalline powder; m.p. 93-94°C, anhydrous 117°C. Slightly soluble in water; soluble in alcohol, benzene.

Derivation: Made by heating ortho-phenylenediamine with glycerin, nitrobenzene and concentrated sulfuric acid; or in like manner from 8-aminoquinoline. Uses: Forms a complex compound with ferrous ions used as an indicator; drier in coatings industry.

phenarsazine chloride. See diphenylaminechloroarsine.

phenazine (azophenylene) $\text{C}_6\text{H}_4\text{N}_2\text{C}_6\text{H}_4$. A tricyclic compound.

Properties: Yellow crystals; m.p. 170-171°C; b.p. >360°C; very slightly soluble in water; soluble in alcohol and ether. Combustible.

Hazard: Probably toxic.

Uses: Organic synthesis; manufacture of dyes; larvi- cide.

phenethicillin. See potassium alpha-phenoxyethyl penicillin.

phenethyl acetate. See 2-phenylethyl acetate.

phenethyl alcohol (phenylethyl alcohol; 2 phenyletha- nol; benzyl carbinol) $\text{C}_8\text{H}_9\text{CH}_2\text{CH}_2\text{OH}$.

Properties: Colorless liquid; floral odor; sharp burn- ing taste; sp. gr. 1.017-1.020 (25°C); refractive index (n_D²⁰) 1.5310-1.5340; m.p. -27°C; b.p. 219°C. Flash point 216°F. Soluble in 50% alcohol; soluble 1 part in 50 parts of water; soluble in fixed oils, alco- hol, and glycerol; slightly soluble in mineral oil. Combustible.

Derivation: (a) By reduction of phenylacetic ethyl ester by sodium in absolute alcohol. (b) By the ac- tion of ethylene oxide on phenylmagnesium bromide and subsequent hydrolysis.

Grades: Technical; N.F.; F.C.C.

Containers: Tin cans and glass bottles; drums.

Uses: Organic synthesis; synthetic rose oil; soaps; flavors; antibacterial; preservative; medicine.

Hazard: May be highly toxic by inhalation or inges- tion.

sec-phenethyl alcohol. See alpha-methylbenzyl alcoho.

phenethylamine. See 2-phenylethylamine.

phenethyl anthranilate. See 2-phenylethyl anthranil- ate.

phenethyl isobutyrate. See 2-phenylethyl isobutyrate.

phenethyl phenylacetate. See 2-phenylethyl phenylace- tate.

phenethyl propionate. See 2-phenylethyl propionate.

phenethyl salicylate. See 2-phenylethyl salicylate.

ortho-phenetidine (2-aminophenetole) $\text{NH}_2\text{C}_6\text{H}_4\text{OC}_2\text{H}_5$. Properties: Oily liquid; rapidly becomes brown on ex- posure to light or air. Solidifies below -20°C; b.p. 228-230°C. Soluble in alcohol and ether; insoluble in water. Combustible.

Superior numbers refer to Manufacturers of Trade Mark Products. For page number see Contents.

fenuron.
aminobenzene)

unstable in air; usually hydrochloride; sp. gr. 287°C; soluble in alco-

a-dinitrobenzene or nitrochloric acid Purified

urity.
n. MCA warning label.
detection of nitrous
; laboratory reagent.
Other restricted arti-

ine; ortho-diaminoben-

ic crystals; darkens in
p. 252-258°C; soluble
chloroform; somewhat

o-dinitrobenzene or ni-
trochloric acid. Purified

urity.
holographic developing
ratory reagent.

minobenzene)

le crystals (oxidizes on
d black); m.p. about
alcohol, ether; soluble
d by light. Flash point

i-dinitrobenzene or ni-
trochloric acid. Purified

urity.
estion and inhalation;
nce, 0.1 mg per cubic
label.

otographic developing
l measurements; inter-
oxidants and accel-
erant.

Other restricted arti-
White label.

-(meta-hydroxyphenyl-
loride)

-HCl.
hite crystals; odorless;
acid to litmus paper;
in alcohol; m.p. 140-
in.

alcohol.

$\text{C}_6\text{H}_5\text{CH}_2\text{OH}$.
0970 (20/20°C); b.p.,
01 mm (20°C); wt 9.1
viscosity 1.01 poise
c.). Combustible.

uffs.

le.

2-phenylethyl acetate (phenethyl acetate)
 $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{OOCCH}_3$. (Not the same as sec-phenylethyl acetate).

Properties: Colorless liquid; peach-like odor. Soluble in alcohol, ether, and most fixed oils. Sp. gr. 1.030-1.034; refractive index 1.497-1.501 (20°C); b.p. 226°C; flash point 230°F; combustible. Toxicity unknown.

Derivation: (a) Interaction of ethyl acetate and aluminumphenyl ethylate. (b) Interaction of acetic anhydride and phenylethyl alcohol in the presence of sodium acetate.

Grades: Technical; F C.C.

Containers: Glass bottles.

Use: Perfumery; laboratory reagent.

sec-phenylethyl acetate. See alpha-methylbenzyl acetate.

phenylethylacetic acid (2-phenylbutyric acid)

$\text{C}_2\text{H}_5\text{CHC}_6\text{H}_5\text{COOH}$.

Properties: White crystals with aromatic odor; m.p. 41.0°C (min), insoluble in water; soluble in alcohol, ketones, and esters. Combustible; toxicity unknown. Use: Organic synthesis; laboratory reagent.

2-phenylethyl alcohol. See phenethyl alcohol.

2-phenylethylamine (phenethylamine; 1-amino-2-phenylethane) $\text{C}_6\text{H}_5\text{C}_2\text{H}_4\text{NH}_2$.

Properties: Liquid with a fishy odor; absorbs carbon dioxide from the air; strong base; sp. gr. 0.9640; b.p. 194.5°C; soluble in water, alcohol, and ether.

Derivation: From phenylethyl alcohol and ammonia under pressure.

Grades: Technical; scintillation.

Containers: Drums.

Hazard: Skin irritant.

Uses: Organic synthesis; laboratory reagent; scintillation counter CO_2 absorber).

2-phenylethyl anthranilate (phenethyl anthranilate)

$\text{H}_2\text{NC}_6\text{H}_4\text{COOC}_2\text{H}_4\text{C}_6\text{H}_5$.

Properties: Colorless liquid which yellows with age; odor of grape and orange; sp. gr. 1.14 (25/25°C). Combustible; nontoxic.

Uses: Perfume; flavoring.

phenylethyl carbinol. See phenylpropyl alcohol.

phenylethylene. See styrene.

N-phenylethylethanolamine $\text{C}_6\text{H}_5\text{N}(\text{C}_2\text{H}_5)_2\text{C}_2\text{H}_4\text{OH}$.

Properties: Solid; m.p. 37.2°C; b.p. 268°C (740 mm); sp. gr. 1.04 (20/20°C); very slightly soluble in water.

Flash point 270°F (COC). Soluble in alcohol, acetone, benzene. Combustible. Low toxicity.

Containers: Drums.

Uses: Solvents; chemical intermediates; preparation of dyes for acetate rayons; laboratory reagent.

phenyl ethyl ether. See phenetole.

5-phenyl-5-ethylhydantoin

$(\text{C}_6\text{H}_5)(\text{C}_2\text{H}_5)\text{CNHCONHCO}$.

Properties: Colorless, odorless crystalline powder; m.p. 199°C; insoluble in water.

Use: Medicine

2-phenylethyl isobutyrate (phenethyl isobutyrate)

$(\text{CH}_3)_2\text{CHCOOC}_2\text{H}_4\text{C}_6\text{H}_5$.

Properties: Colorless liquid; pleasant odor; sp. gr. 0.988 (25/25°C); refractive index (n 20/D) 1.488; soluble in alcohol and ether. Combustible; nontoxic.

Uses: Perfumes; flavoring.

phenylethylmalonylurea. See phenobarbital.

2-phenylethyl mercaptan $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{SH}$.

Properties: Liquid. Boiling range 193-225°C; unpleasant odor; sp. gr. 1.0264 (60/60°F); refractive index 1.5582 (n 20/D); flash point 160°F. Combustible.

Containers: Bottles.

Hazard: Probably toxic.

Uses: Organic synthesis; laboratory reagent.

2-phenylethyl phenylacetate (phenethyl phenylacetate)

$\text{C}_6\text{H}_5(\text{CH}_2)_2\text{OOCCH}_2\text{C}_6\text{H}_5$.

Properties: White crystals; hyacinth odor. Sp. gr. 1.080-1.082; congealing point 27°C. Combustible; low toxicity.

Containers: Bottles.

Uses: Perfumery; flavors.

2-phenylethyl propionate (phenethyl propionate)

$\text{C}_2\text{H}_5\text{COOC}_2\text{H}_4\text{C}_6\text{H}_5$.

Properties: Synthetic colorless liquid; flower-fruit odor; miscible with alcohols and ether; sp. gr. 1.012 (25/25°C). Combustible; low toxicity.

Uses: Perfumes; flavors.

2-phenylethyl salicylate (phenethyl salicylate)

$\text{C}_6\text{H}_5\text{C}_2\text{H}_4\text{OOCCH}_2\text{C}_6\text{H}_4\text{OH}$.

Properties: Snow-white crystals; very faint aromatic odor. Soluble in 14 parts of 95% alcohol. Congealing point 41.5°C. Combustible. Low toxicity.

Uses: Flavors.

phenyl ferrocenyl ketone. See benzoylferrocene.

phenyl fluoride. See fluorobenzene.

phenyl fluoromethyl ketone. See fluoroacetophenone.

phenylformamide. See formanilide.

phenylformic acid. See benzoic acid.

phenyl gamma acid. See phenyl-2-amino-8-naphthol-6-sulfonic acid.

phenyl glycidyl ether (1,2-epoxy-3-phenoxypropane;

PGE) $\text{H}_2\text{COCHCH}_2\text{OC}_6\text{H}_5$.

Properties: Colorless liquid; sp. gr. 1.11; b.p. 245°C; m.p. 3.5°C.

Hazard: Toxic by skin absorption; moderately irritating to eyes and skin. Tolerance, 10 ppm in air.

D(-)-alpha-phenylglycine $\text{C}_6\text{H}_5\text{CH}(\text{NH}_2)\text{COOH}$.

Properties: Crystals; m.p. 245-248°C; insoluble in water, ether, alcohol; soluble in acid.

Containers: Fiber drums.

Use: Intermediate.

phenylglycolic acid. See mandelic acid.

phenylhydrazine $\text{C}_6\text{H}_5\text{NHNH}_2$.

Properties: Pale yellow crystals or oily liquid; becomes red-brown on exposure to air. Soluble in alcohol, ether, chloroform, benzene, and dilute acids. Soluble in water, alcohol, and benzene. Sp. gr. 1.0978; m.p. 19.35°C; b.p. 243.5°C, with decomposition. Flash point 192°F (c.c.). Combustible. Autoignition temp. 345°F. Also available as the hydrochloride.

Derivation: Reduction of diazotized aniline; followed by reaction with sodium hydroxide.

Grades: Commercial; C.P.; reagent.

Containers: Glass bottles; drums.

Hazard: Highly toxic by inhalation, ingestion, and skin absorption. Tolerance, 5 ppm in air.

Superior numbers refer to Manufacturers of Trade Mark Products. For page number see Contents.

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Database: US Patents Full-Text Database ▲
US Pre-Grant Publication Full-Text Database
USPTO Abstracts Database
USPTO Abstracts Database
Current World Patents Index
IBM Technical Disclosure Bulletins ▼

Term: 112 and (mice or miticide or miticidal) ▲

Display: 100 Documents in Display Format: CIT Starting with Number 1

Generate: Hit List Hit Count Image

[Search](#) [Clear](#) [Help](#) [Logout](#) [Interrupt](#)

[Main Menu](#) [Show S Numbers](#) [Edit S Numbers](#) [Preferences](#)

Search History

Today's Date: 8/3/2001

<u>DB Name</u>	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u>
USPT,JPAB,EPAB,DWPI	112 and (mite or miticide or miticidal)	8	<u>L13</u>
USPT,JPAB,EPAB,DWPI	11 and essential oil	519	<u>L12</u>
USPT,JPAB,EPAB,DWPI	12 and essential oil	8	<u>L11</u>
USPT,JPAB,EPAB,DWPI	11 same (mite or miticide or miticidal)	9	<u>L10</u>
USPT,JPAB,EPAB,DWPI	17 and (pest\$8)	0	<u>L9</u>
USPT,JPAB,EPAB,DWPI	17 and (mite or miticide or miticidal)	0	<u>L8</u>
USPT,JPAB,EPAB,DWPI	11 near9 essential oil	3	<u>L7</u>
USPT,JPAB,EPAB,DWPI	11 and plant essential oil	2	<u>L6</u>
USPT,JPAB,EPAB,DWPI	12 and (contact\$3 or fumig\$5 or spray\$3)	30	<u>L5</u>
USPT,JPAB,EPAB,DWPI	13 and (contact\$3 or fumig\$5 or spray\$3)	0	<u>L4</u>
USPT,JPAB,EPAB,DWPI	11 near9 (mite or miticide or miticidal)	3	<u>L3</u>
USPT,JPAB,EPAB,DWPI	11 and (mite or miticide or miticidal)	54	<u>L2</u>
DWPI,USPT,EPAB,JPAB	(phenethyl alcohol or phenylethyl alcohol or 2-phenylethanol or benzyl carbinol or 2-phenylethyl alcohol or 1-phenylethyl alcohol)	4226	<u>L1</u>

(FILE HOME) ENTERED AT 16 31 15 ON 03 AUG 2001

INDEX ADISALORTS, ADISINSIGHT, AGRICOLA, ANABSTR,
AQUASCI, BIOBIO, BIFISS
BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO,
CABA, CANCERLI
CAPLUS, CEAP, NTR, GEN, CIN, CONFSCI, CROPB, CROPU, DDFB,
DDFU, DGENI,
DRUGB, DRUGG, V, NCH, DRUGMON062, DRUGNL, ENTERED AT
16 31 37 ON 03 AUG 2001

SEA (PHENYLETHYL ALCOHOL) OR PHENYLETHYL
ALCOHOL) OR 2-PROPYL-

- 145 FILE A-KICOLA
- 138 FILE A-KADSTF
- 14 FILE A-KASCI
- 170 FILE B0-BUSINESS
- 2 FILE B0-BUSMERCE
- 734 FILE B0-BUS
- 110 FILE B0-BECHABS
- 110 FILE B0-BECHDS
- 134 FILE B0-BECHNO
- 250 FILE C-APCA
- 51 FILE C-APCERLI
- 3986 FILE C-APLUS
- 68 FILE C-APANTR
- 11 FILE C-AP
- 34 FILE C-AP
- 6 FILE C-APASCI
- 17 FILE C-APB
- 92 FILE C-APD
- 97 FILE C-APB
- 66 FILE C-AP
- 10 FILE C-APINE
- 97 FILE C-APB
- 16 FILE C-APGLAUNCH
- 10 FILE C-APGMON062
- 78 FILE C-APG
- 4 FILE C-APB
- 578 FILE C-APGASE
- 129 FILE C-APBIBASE
- 91 FILE C-APG
- 349 FILE C-AP
- 7 FILE C-APUSAIE
- 336 FILE C-APB
- 151 FILE C-AP-EPLUS
- 36 FILE C-APMET
- 235 FILE C-APFSCI
- 493 FILE C-APLINE
- 26 FILE C-APSHF
- 24 FILE C-AP
- 6 FILE C-AP
- 320 FILE C-APAL
- 47 FILE C-APB
- 553 FILE C-APSEAPCH
- 2 FILE C-APLINE
- 239 FILE C-APLINE
- 341 FILE C-APLIT
- 4507 FILE C-APAFULL
- 592 FILE C-APB
- 592 FILE C-APB

L1 QUE (PHENYLETHYL ALCOHOL) OR PHENYLETHYL
ALCOHOL) OR 2-PROPYL-

SEA (L-ALANINE) OR ANTIMITOGEN OR MITICID)

- 1 FILE B0-BUSINESS
- 2 FILE B0-BUS
- 2 FILE C-APCA
- 1 FILE C-APCERLI
- 13 FILE C-APLUS
- 13 FILE C-APG
- 1 FILE C-APG
- 5 FILE C-APB
- 1 FILE C-AP-EPLUS
- 1 FILE C-APFSCI
- 1 FILE C-APLINE
- 1 FILE C-APINE
- 62 FILE C-APAFULL
- 12 FILE C-APB
- 12 FILE C-APB

L2 QUE (L-ALANINE) OR ANTIMITOGEN OR MITICID)

SEA (L-ALANINE) (FUMIGANT) OR CONTACT) OR SPRAY) OR PEST)

- 1 FILE B0-BUSINESS
- 1 FILE B0-BUS
- 1 FILE C-APCA
- 3 FILE C-APLUS
- 10 FILE C-APG
- 1 FILE C-APG
- 1 FILE C-APB

1 FILE JC-ST-EPLUS

1 FILE LIF-SCI

45 FILE USPATFULL

3 FILE WPIDS

3 FILE WPINDEX

L3 QUE (L-ALANINE) (FUMIGANT) OR CONTACT) OR SPRAY) OR PEST)

FILE BIOSIS, CAPLUS, WPIDS, CROPU) ENTERED AT 16 31 20 ON 03
AUG 2001

L4 17 S L3

L5 17 DUP REM L4 (0 DUPLICATES REMOVED)